

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 13445-007WO1	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US02/06601	International filing date ( <i>day/month/year</i> ) 05 March 2002 (05.03.2002)	(Earliest) Priority Date ( <i>day/month/year</i> ) 05 March 2001 (05.03.2001)
Applicant ERIC L. PRAHL		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the Report**

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No. 2



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/06601

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 21/00

US CL : 356/73.1

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 356/73.1; 385/31, 32, 33, 34, 147

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
East

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	J.C.Knight Properties of photonic crystal fiber and the effective index model, Opt. Soc March 1998, Vol 15, No.3, pages 748-752	1-48
Y	R.F Cregan, Single-Mode photonic Band Gap Guidance of Light in Air, September 1999, Vol 285, pages 1537-1539.	1-48
Y	J.C. Knight, Photonic Band Gap Guidance in Optical fibers, Science, November 1998, Vol 282, pages 1476-1478	1-48



Further documents are listed in the continuation of Box C.



See patent family annex.

<p>* Special categories of cited documents:</p>	
<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p>
<p>"E" earlier application or patent published on or after the international filing date</p>	<p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p>
<p>"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p>	<p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p>
<p>"O" document referring to an oral disclosure, use, exhibition or other means</p>	<p>"&amp;" document member of the same patent family</p>
<p>"P" document published prior to the international filing date but later than the priority date claimed</p>	

Date of the actual completion of the international search

22 July 2002 (22.07.2002)

Date of mailing of the international search report

20 AUG 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Tu T. Nguyen *Macale*

Telephone No. (703) 308-0956

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
ERIC L. PRAHL  
FISH & RICHARDSON P.C.  
225 FRANKLIN STREET  
BOSTON, MA 02110-2804

## PCT

### NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 13445-007WO1	Date of Mailing (day/month/year) <b>20 AUG 2002</b>
International application No. PCT/US02/06601	International filing date (day/month/year) 05 March 2002 (05.03.2002)
Applicant ERIC L. PRAHL	

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**  
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

**Where?** Directly to the International Bureau of WIPO, 34, chemin des Colombettes  
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

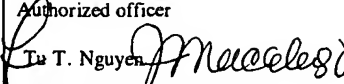
4. **Reminders**

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90 bis.1 and 90 bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Commissioner for Patents Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer  Telephone No. (703) 308-0956
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Form PCT/ISA/220 (April 2002) (See notes on accompanying sheet)

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:  
FRANK R. OCCHIUTI  
FISH & RICHARDSON P.C.  
225 FRANKLIN STREET  
BOSTON, MA 02110-2804

## PCT

WRITTEN OPINION

(PCT Rule 66)

RECEIVED  
APR 8 2003  
TC 1700

Applicant's or agent's file reference 13445-007WO1		Date of Mailing (day/month/year) <b>10 MAR 2003</b> REPLY DUE within 2 months/days from the above date of mailing
International application No. PCT/US02/06601	International filing date (day/month/year) 05 March 2002 (05.03.2002)	Priority date (day/month/year) 05 March 2001 (05.03.2001)
International Patent Classification (IPC) or both national classification and IPC IPC(7): G01N 21/00 and US Cl.: 356/73.1		
Applicant OMNIGUIDE COMMUNICATIONS		

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2 (a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application
3. The applicant is hereby invited to reply to this opinion.
 

**When?** See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension. See rule 66.2(d).~~

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.  
For an informal communication with the examiner, see Rule 66.6

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 05 July 2003 (05.07.2003).

Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230	Authorized officer <i>Sham S. Hype</i> Tu T Nguyen Telephone No. (703) 308-0956
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WRITTEN OPINION

International application No.

PCT/US02/06601

I. Basis of the opinion

1. With regard to the elements of the international application:\*

- ☒ the international application as originally filed
- ☒ the description:  
 pages 1-21, as originally filed  
 pages NONE, filed with the demand  
 pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the claims:  
 pages 22-27, as originally filed  
 pages NONE, as amended (together with any statement) under Article 19  
 pages NONE, filed with the demand  
 pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the drawings:  
 pages 1-14, as originally filed  
 pages NONE, filed with the demand  
 pages NONE, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
 pages NONE, as originally filed  
 pages NONE, filed with the demand  
 pages NONE, filed with the letter of \_\_\_\_\_.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
 These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINION

International application No.  
PCT/US02/06601

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. STATEMENT**

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-48</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-48</u>	NO
Industrial Applicability (IA)	Claims <u>1-48</u>	YES
	Claims <u>NONE</u>	NO

**2. CITATIONS AND EXPLANATIONS**

Claims 1-48 lack novelty and inventive step under PCT Article 33(3) as being obvious over Byvik et al (4,890,915).

With respect to claims 1,40, Byvik discloses a method for monitoring a crystal fiber. The method comprises: directing a test light 18 (fig 1) toward a side of a crystal fiber 14 (fig 1), detecting (spectrometer, fig 1) the measurement light emerging from the crystal fiber, monitoring the quantity of the fiber (abstract).

With respect to claims 2-3,13,17,19-22,39, Byvik does not explicitly disclose the claimed limitations as claimed. However, the claimed limitations would have been known in the art. It would have been obvious to modify Byvik's method with the known claimed limitations in order to improve the system performance. The modification involves only routine skill in the art.

With respect to claims 4,6,7-8,31, Byvik does not explicitly disclose the measurement spectrum. However, it would have been obvious a designed choice to modify Byvik's method with different measurement spectrum to monitor different characteristics of the fiber.

With respect to claims 5,9-11,33-34,Byvik does not disclose the function as claimed. However, the claimed function would have been known. It would have been obvious to combine the known function with Byvik to make the system more accurate. The modification involves only routine skill in the art.

With respect to claims 12,16,18,23-25,32, since Byvik discloses determining the characteristic of the fiber (abstract), Byvik inherently performs the claimed limitations.

With respect to claims 14-15,26-29, 35-37,44-45, 47, Byvik does not disclose the claimed limitations. It would have been obvious to modify Byvik with the claimed limitations as claimed to make the system more accurate. The modification involves only routine skill in the art.

With respect to claim 30, refer to discussion in claim 1 above. Further, Byvik discloses a broadband light source 18 (fig 1).

With respect to claim 38, Byvik discloses using crystal fiber for testing (abstract).

With respect to claims 41-43,46,48 Byvik does not disclose a controller. However, using a controller to control the test light and the detector would have been known. It would have been obvious to modify Byvik with the known controller to make the system more efficient.

Claims 1-48 meet the criteria set out in PCT Article 33(4), because the invention is useful to the industry.

----- NEW CITATIONS -----

US 4,890,915 A (BYVIK et al) 02 January 1990 (02.01.1990), see entire document.

WRITTEN OPINION

International application No.  
PCT/US02/06601

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

**TIME LIMIT:**

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.